RDECOM magazine
A publication of the U.S. Army Research, Development and Engineering Command (Provisional)
JUNE 2003

News Departments

in the lab

Each day, RDECOM's talented scientists and engineers research innovative technologies that position the U.S. Army as the world's premiere land force. "In the lab" highlights recent and on-going initiatives that will benefit soldiers.

Contents

Soldiers to Get Power Boost

By Curt Biberdorf

Natick, Mass.—Rapid yet sustained energy for warfighters could be a squeeze away with "Power Fuel," a quick energy booster gel in development at Soldier Systems Center.

Power Fuel is part of the center's Performance Enhancing Delivery System, a military food system that will deliver performance enhancing, natural foods to troops in the field.

Packaged in plastic pouches, the 1-ounce Power Fuel servings can be sucked out while on the move. Troops engaged in high physical activity might also benefit from such a product, and food technologists are taking the gel formulation to another level.

Natick's new Power Fuel gel will give soldiers an energy boost to enhance their performance. Packed with 3.4-ounces of performance enhancing ingredients and 240 to 320 calories, Power Fuel gives three times the portion of commercial gels.

"The more motivated (soldiers) are going to want to do anything to get a performance advantage," said Jack Briggs, a food technologist on the Performance Enhancement and Food Safety Team.

Current flavors are mixed berry, apple cinnamon, cherry vanilla and mocha. The gel ingredients include juice concentrates—except for mocha—various carbohydrate types, unsaturated fats and gums. Caffeine was added to the mocha gel; other performance enhancing ingredients, such as tyrosine or glutamine, may be added as well.

By comparison, some commercial gels consist of corn or rice syrup and flavoring, and they are not required to have a minimum shelf life of three years at 80 degrees Fahrenheit or six months at 100 degrees Fahrenheit. Packaged in a capped tube, Power Fuel's serving size of 3.4-ounces delivers from 240 calories to 320 calories, depending on the flavor, and is about three times the portion of commercial gels.

Briggs said a goal is to have Power Fuel become a commercially available item to hold down purchase costs. If approved for the military, Power Fuel will be issued as part of the First Strike Ration, which is scheduled for fielding in 2007.

The Power Fuel energy boosting gel will be available in four flavors, including mixed berry, apple cinnamon, cherry vanilla and mocha. Power Fuel is scheduled for fielding in 2007.

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Unique Rooftop Lab Tests Weapon Sensors

By Jim Bowne

Huntsville, Ala.—The top of it can be seen rising against the skyline from a few specific locations on Redstone Arsenal. Parts of its base can be seen through the trees, if you're in close proximity. Some suspect it's a fire tower. Others think it might be a NASA test tower. Still others believe that, whatever it is, it has long been abandoned.

The 329-foot tower, officially called the Robert F. Russell Measurement Facility, is actually a lab used for testing sensors and developing tactical weapons sensors and seekers. Managed and operated by the Aviation and Missile Research, Development and Engineering Center, the Russell facility can be used by any government agency or private contractor sponsored by a government agency.

The Russell Tower, standing 329-feet tall, is a unique testing facility located on the southern edge of Redstone Arsenal. Photo by Jim Bowne

"There may be others as tall, but this is the only (tower) in the country that has a laboratory at the top of it," said Frank Hayes, acting chief of the research center's Infrared and Optical Technical Branch. The tower, complete with 30 floors and 485 stairs, has a high tech lab at the 300-foot level, providing a 180-degree scenic view, and a rooftop lab at the 329-foot level.

"It's available for use 360-days-a-year, 24-hours-a-day," Hayes said. "We just want to make sure that everyone knows what happens at the tower so that the various governmental agencies and their contractors will take advantage of this unique facility."

Facility Manager Eddie Batt (left) and Operations Representative Orville Dennis (right) listen as Acting Chief of AMRDEC's Infrared and Optical Technical Branch Frank Hayes reviews the schedule for an upcoming test. Photo by Jim Bowne

The facility has two elevators, a main elevator and a passenger elevator. The main elevator serves as a movable laboratory area where measurements and tests can be conducted at any elevation level from zero to 300 feet. When operating from this elevator, data collected from any level can be transmitted, if needed, to the rooftop laboratory over data cables for recording and data analysis.

"The main elevator has windows and can stop at every floor," Hayes said. "This allows a customer to stop at different levels and get different 'look-down' angles on the target."

Hayes explained that the second elevator transports personnel and equipment to any of the facility's nine landings. In addition, limited measurements and tests can be conducted directly from the elevated laboratory rooftop.

Another key element of the facility is a 70-ton turntable, on which tactical ground targets, such as tanks, can be mounted and, in conjunction with the test elevator, viewed at different angles. The turntable also can be moved and tilted to simulate virtually any missile approach angle, from a horizontal direct fire to a vertical top attack.

A tank target is raised on a turntable to change the angle at which it will be viewed during tests at the Russell Tower.

The tower is named in honor of, and dedicated to, the memory of Robert F. Russell, who was instrumental in getting the project started. Russell was chief of what was then called the Radar Technology Branch, and the tower was completed about the time of his death in 1988.

New Cargo Net to Improve Fielding

Tank-Automotive Research, Development and Engineering Center

Warren, Mich.—Tank-Automotive Research, Development and Engineering Center's Small Business Innovation Research contractor, Creare, Inc., is developing an innovative cargo securing net that will reduce manpower and increase mobility. It will have the capacity to handle more than 8,000-pounds of cargo from ammunition to repair parts and will be deployable by truck, plane and ship to any overseas operation.

Current cargo handling approaches are time consuming, inefficient and not well suited for field use. More importantly, current approaches do not meet the demands and requirements for a highly mobile, quick moving and quick reacting Army. With the Army's emphasis on direct field supply and rapid deployment, more flexible cargo containment and restraint systems are needed.

The new cargo security system will provide a cost-effective, lightweight, easily handled and simply stowed solution. For example, special materials will restrain the load during impact and prevent it from moving. The new system also secures the load without specially constructed equipment and minimizes the need for preplanning, special training or tools.

The Tank-Automotive research center's new cargo securing system can handle more than 8,000-pounds of equipment and can be deployed by truck, plane or ship.

Edgewood Center Breaks Ground for $38 Million Chemistry Laboratory

Edgewood Chemical Biological Center

Aberdeen Proving Ground, Md.—The Edgewood Chemical Biological Center held a groundbreaking ceremony in May for its new Advanced Chemistry Lab.

Michael Parker, Research Development and Engineering Command, and Jim Zarzycki, ECBC technical director, addressed the crowd of more than 100 public officials, ECBC employees and Army representatives.

"ECBC has contributed greatly to making our world a safer place. Our experts are called upon by our military, our homeland defenders and our international allies," said Zarzycki. "The Advanced Chemistry Lab will allow us to continue our work at an even higher level of sophistication for years to come."

Dignitaries who attended the ceremony included U.S. Sen. Paul Sarbanes (D-Md.); Harford County Executive Jim Harkins; Maryland State Delegate Charles Boutin; and representatives from the offices of U.S. Sen. Barbara Mikulski (D-Md.) and U.S. Rep. Dutch Ruppersberger (D-Md.).

The 74,000-square foot lab will serve as the only U.S. small-scale facility under the international Chemical Weapons Convention, which means it will be the only national lab allowed to manage our nation's supply of chemical agent for research purposes. High-end technology projects involving decontamination and filtration will be conducted at the lab along with precision chemical and materials research in support of numerous federal agencies.

(from left) U.S. Senator Paul Sarbanes (D-Md.) joins Jim Zarzycki, ECBC technical director, at the groundbreaking ceremony for ECBC's Advanced Chemistry Lab.

Baltimore-based architectural and mechanical contracting firms Gaudreau, Inc., and Poole & Kent are handling design and construction duties for the $38 million project.

Test Simulates Battlefield Technology

Communications-Electronics Research, Development and Engineering Center

Fort Monmouth, N.J.—The Communications-Electronics Research, Development and Engineering Center recently held a successful test to simulate communications and surveillance technologies during battlefield conditions. Officially called the Command, Control, Communications, Computers, Intelligence, Surveillance and Reconnaissance On-the-Move Testbed, the demonstration was conducted at Fort Dix, N.J.

"The selection of CERDEC to execute the Testbed represents the importance of Fort Monmouth to the (communications and surveillance) community and its viability to the Army's future efforts," said CERDEC Special Projects Office Director Darrell Davis.

The goals of the Testbed were to test the systems' ability to accurately detect and identify targets in a timely manner; provide the commander the ability to re-plan, re-task, rehearse, monitor and execute collaboratively among multiple systems; and ensure reliable data delivery over a multi-tiered communications network.

Moving Target Indicator and Synthetic Aperture Radar technologies are mounted on the nose of this UH-60 Blackhawk, which was part of CERDEC's extensive testing of advanced communications systems.

The test "playbox" included access to more than 80 maneuver ranges, headquarters, engineering facilities and airfields, and used National Guard vehicles as enemy forces. The Testbed and ranges were enhanced with a complex video network, which provided real-time views of key ranges and connections to Ft. Belvoir, Va., and other control points.

The Testbed also included a prototype command and control vehicle using a modified HUMVEE equipped with advanced communications and software systems, including radios, modems and satellite communications equipment.

An independent data analysis group will help evaluate the Testbed results. According to Davis, the next iteration of the field portion of the Testbed will occur in summer 2004.

An Unmanned Ground Vehicle with Javelin Launcher technology was part of CERDEC's recent battlefield communications test.

Future Truck Systems Will Streamline Logistics Delivery

Tank-Automotive Research, Development and Engineering Center

Warren, Mich.—The Tank-Automotive Research, Development and Engineering Center is developing an advanced tactical truck system, called the Future Tactical Truck System, which will streamline deliveries to deployed troops.

The system's Maneuver Sustainment Vehicle will provide transportation and distribution of cargo, equipment and personnel. This vehicle also will require fewer maintenance tools and features special software and sensors that will greatly enhance system reliability. In fact, this vehicle system will require 53 fewer vehicles and 43 fewer mechanics than current vehicles, such as the HUMVEE.

Moreover, the future vehicle concept will provide increased fuel efficiency with extended supply ranges of 600 to 900 miles. The system will enable 100 percent communications support, thus increasing supply delivery accuracy and eliminating unnecessary re-supply activities.

The Maneuver Sustainment Vehicle concept also incorporates Tank-Automotive Command's intelligent load handling systems, which are being developed as part of the Smart Distribution program.

The Maneuver Sustainment Vehicle will provide transportation and distribution of cargo, equipment and personnel. This vehicle also will require fewer maintenance tools and features special software

Joint Forces Command Overseeing Combat ID Testing

By Ron Schafer

Norfolk, Va.—The U.S. Joint Forces Command and the Communications-Electronics Research, Development and Engineering Center recently began evaluating a new tool that may help improve combat identification on the battlefield.

Joint Forces Command is teaming with the CERDEC to evaluate a new tool, called the Battlefield Target Identification Device, that can identify if a vehicle is enemy or friendly with 98 percent accuracy.

Currently in the middle of a five-year program, the center began its Coalition Combat Identification Advanced Concept Technology Demonstration in 2001 to demonstrate interoperable combat identification systems. The technology demonstration model takes new or existing technologies and puts them in the field in a realistic environment for evaluation outside the sterile conditions of a laboratory.

Joint Command and the research center recently evaluated the Battlefield Target Identification Device, developed by Raytheon, which will distinguish whether a vehicle is friend or foe using advanced millimeter-wave technology. Recent testing indicates the system takes less than a second to identify a vehicle at a range of more than three miles with 98 percent accuracy. The NATO-compliant device also integrates with a vehicle's onboard weapons system, allowing the operator to make engagement decisions instantly using real-time identification data.

According to John Miller of Joint Command's Combat ID team, being able to put this type of technology into the hands of the user for evaluation makes the demonstration a valuable and successful tool.

"In my mind," said Miller, "the uniqueness of a (technology demonstration) is that it brings together, in one team, the technical developers, the warfighters and the buyers…We have to have a strategy of how to get equipment into the hands of the warfighters."

Miller said field evaluations would begin soon and continue into 2005.

120mm Mortar Ammunition Gets Lighter Container

Armament Research, Development and Engineering Center

Picatinny Arsenal, N.J.—The Armament Research, Development and Engineering Center and the Office of the Product Manager for Mortar Systems are developing a lightweight packing container, called Monopack, for 120mm mortar ammunition.

The current system exceeds the 90-pound maximum weight requirement and requires two people to handle. A typical 120mm mortar cartridge weighs 32-pounds, and the current packing materials weigh 18.5-pounds per round.

The Monopack represents significant improvement in ammunition packaging design and addresses the shortcomings of existing packaging systems. Among the system's benefits are a 60 percent weight reduction, from 18.5-pounds to 7.4-pounds per round; increased shipping capacity from 48 to 56 rounds; portability by one soldier; easier access to ammunition; and reduced loading, assembling and packing costs.

The armament research center develops a lighter packing container for 120mm mortar ammunition, called Monopack (at right). The current system, shown on the left, is very heavy and requires two soldiers to lift.

The Monopack is reusable and fully compatible with existing ammunition storage racks. In addition, this technology can be adopted into other families of mortar ammunition such as the 60mm, 81mm and other ammunition that use fiber/metal container packaging.

Fielding is expected in fiscal year 2005.

in the field

RDECOM's primary mission is to get the right technologies in the hands of soldiers faster. "In the field" features technologies and systems developed by RDECOM that have been recently fielded or deployed to soldiers.

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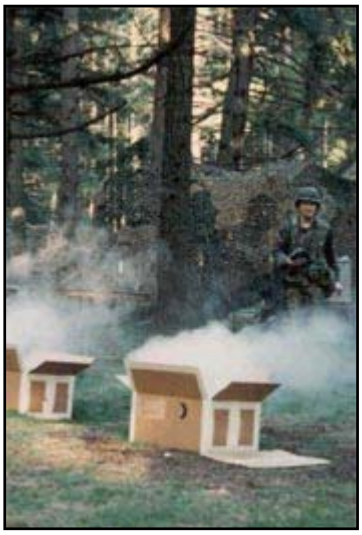
Natick Develops Kitchen-In-A-Carton

Natick Soldier Center

Natick, Mass.—Natick Soldier Center's Remote Unit Self Heating Meal has been referred to as a "kitchen-in-a-carton" because it provides a complete dining hall meal with a hot entrée, vegetable, starch and dessert, but does not require the logistics of food preparation, kitchens, refrigeration, fuel or water.

This compact, self-contained module provides a convenient self-heating capability to support highly mobile, remote military operations, where widely dispersed personnel are away from field kitchens. Weighing less than 30-pounds, the portable meal can be delivered by vehicle, by precision airdrop or carried into remote areas.

The disposable, shelf-stable unit also includes all items necessary to heat and serve a complete meal to 18 personnel in less than 30 minutes. The heating process is initiated with the simple pull of a tab, that tears open water pouches that activate heaters within each food tray. After 20 minutes, the hot food trays are removed from the module. While the hot food is being served from the trays, the heaters continue to keep the trays hot—a feature that is particularly advantageous in cold weather.



Natick's "kitchen-in-a-carton" weighs less than 30-pounds and can be delivered to remote troops by vehicle, hand delivery or precision airdrop. The disposable unit includes all items necessary to heat and serve a complete meal to 18 personnel in less than 30 minutes.

The Remote Unit Self Heating Meal provides a complete dining hall meal with a hot entrée, vegetable, starch and dessert, but does not require the logistics of food preparation, kitchens, refrigeration, fuel or water.

Army Lab Improves Abrams Shield

By Tonya Johnson

Adelphi, Md.—The Army Research Laboratory played a major role in the development of a shield to protect the Abrams tank's exhaust system against enemy threats during Operation Iraqi Freedom. The lab was contacted after reports of Iraqi troops zeroing in on the exhaust system in an attempt to put the Abrams out of commission.

In addition, several Marine Corps vehicles also showed similar vulnerabilities against these threats, said Mike Zoltoski, the survivability technology coordinator in the Weapons and Materials Research Directorate.

The lab worked with the Program Manager for Abrams, General Dynamics Land Systems, Aberdeen Test Center, Army Evaluation Center and the National Ground Intelligence Center from the initial phase of design to the completion of the evaluation.

"It was a team effort," said Zoltoski. "The whole process from design to test and evaluation only took about four days, and the results proved the shield offered valuable protection."

The Army Research Lab developed a special shield to protect the Abrams tank, as well as several Marine Corps vehicles, from enemy attack.

Critical to the effort was the Aberdeen Test Center, which constructed and evaluated the prototype shield against actual threat munitions and determined that the addition of the shield did not degrade the automotive performance of the Abrams. Similar shields also were developed for the Marine Corps' vehicles.

General Dynamics Land Systems built 20 shields at the Lima Army Tank Plant, Lima, OH, which were delivered to Iraq within a week of first receiving the call for help. President George W. Bush specifically thanked workers at the plant for their role in the development of this item during his recent visit.

The Army lab has a long history of transitioning armor technologies from the laboratory to the field. The group of scientists, engineers and technicians that helped design the shield were also responsible for the armor designs used on the Abrams and reactive armor for the Marine Corp M60s, Bradley Fighting Vehicles and Stryker. Currently, they are working on lightweight advanced armors for the Future Combat Systems, including structural armor to protect against small arms projectiles.

M908 Cartridge Makes Combat Debut

By Greg Kolasa and Dave Rigoglioso

Picatinny Arsenal, N.J.—The Armament Research, Development and Engineering Center's 120mm M908 ammunition cartridge was recently deployed to the Middle East to support Operation Iraqi Freedom. The M908 is fired from the M1A1 and M1A2 Abrams tanks and is used to destroy concrete obstacles, permitting the rapid advance of infantry and armor.

The armaments research team celebrates deployment of the new 120mm M908 ammunition cartridge, which can be fired from an Abrams tank to destroy concrete barriers.

The M908 was developed in response to an urgent requirement from Korea in 1996, when the M728 Combat Engineer Vehicle and its 165mm M123 demolition round was removed from the Army's inventory, an action that threatened to leave combat engineers without a means to destroy or "rubble" large obstacles that would otherwise impede friendly troops.

In late 1996, the center conducted tests using several 120mm ammunition items in inventory. The tests revealed that modifying the M830A1 high explosive, multi-purpose cartridge performed just as well, if not better, at reducing obstacles than the 35-pound M123 warhead. The modification also proved effective against bunkers, concrete walls and light armored vehicles.

As a result of successful testing, the M830A1 was modified to produce the M908. Specifically, the M830A1's proximity switch nose—used to defend against attacking helicopters—was replaced with a hard steel nose. The steel nose allows the projectile to "burrow" itself inside an obstacle before the warhead functions. This fractures the concrete block from the inside out and is more effective than detonating a large explosive on the block's surface. To date, Alliant Techsystems and General Dynamics-OTS have converted more than 19,000 M908s.

"The M908 met an urgent Army requirement for Korea, and now, with other contingencies, has become a highly desirable item in our Abrams inventory for bunker defeat and urban battle," said Bill Sanville, project manager, Maneuver Ammunition Systems.

Field Distribution Becomes Smarter

Armament Research, Development and Engineering Center

Picatinny Arsenal, N.J.—The Armament Research, Development and Engineering Center teamed with the Army Combined Arms Support Command to improve field distribution of equipment and supplies through a concept dubbed "Smart Distribution."

The Army's current distribution system is incompatible with transportation modes, materials handling equipment and cargo platforms. This leads to inefficient handling of supplies and equipment.

The Smart Distribution concept enables more timely and efficient equipment distribution. To make this happen, the system features a Modular Platform System and an Intelligent Load Handling System, which are compatible with Future Tactical Truck Systems currently in development.

The Modular Platform System will be designed to interface directly with the logistics rails in Air Force aircraft. Additionally, the platform will be capable of being loaded onto a Palletized Loading System or the current Heavy Expanded Mobile Tactical Truck's Load Handling System. The modular design will permit delivery of partial loads, providing a less-than-truckload capability not currently available. In addition, the system's air droppable and sling loadable features will reduce the varying types of platforms in the distribution system. Integral to the modular platform are a smart tie down system and modular packaging that will allow multiple types of supplies to be configured for a unit or a vehicle crew. The smart tie down is a net-like restraint system that enables rapid and safe securing.

The Intelligent Load Handling System features an articulated, or accordion-like, load-handling arm with special software. The arm's movements will enable platforms to be loaded and unloaded without being obstructed by the C130 aircraft's tail, as well as lift supply modules on and off a platform loaded onto future truck systems. Through machine vision and robotic design, the handling system also permits precision cargo placement at platform locations predetermined by the system's software.

Technicians Repair Communications, Electronics Equipment in Kuwait

By Bob Whistine

Camp Arifjan, Kuwait—During Operation Iraqi Freedom, rapid communications and tracking systems on the battlefield saved the lives of soldiers, Marines, sailors and airmen. Now that war efforts are focused on rebuilding Iraq, damaged communications and electronic systems need to be repaired. To provide on-site, expedited repairs while conserving costs, the Communications-Electronics Command created an Electronics Sustainment Support Center at Camp Arifjan, Kuwait.

"The war fighter knows that he can bring or send his equipment to this site and we fix it here or send it back to the states for a quick fix," said Thomas DeMoss, the center's site manager.

"Today's military is fast moving and uses highly sophisticated equipment that must be repaired quickly. Without the dedication of the civilians and contractors who support the warfighter, the complex equipment that contributes to our Army's overwhelming superiority on the battlefield would not have been combat ready," concluded DeMoss.

Fred Tremaine, an electronics technician, repairs an air conditioning unit at Camp Arifjan, Kuwait.

Computer Technician Brian Waters, a member of a team of technicians making communications and electronics repairs at Camp Arifjan, Kuwait, repairs a computer system.

partnership

RDECOM partners with industry and academia to capitalize upon advancing technologies and to develop the next generation of scientists and engineers. RDECOM Magazine's "partnership" news department highlights the command's successful collaborations with industry and academia.

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College Program Supports Tomorrow's Researchers and Engineers

Army Materiel Command
Research, Development and Engineering Command (Provisional)

Alexandria, Va.—A command focused on developing advanced technologies and fielding them to soldiers in the shortest time needs to ensure that it will have a talented and constant pool of researchers, scientists and engineers. The Research, Development and Engineering Command (Provisional), in partnership with its oversight agency Army Materiel Command, are making investments today to develop the next generation of command staff.

AMC and RDECOM are expanding partnerships with the nation's Historically Black Colleges and Universities, Minority Institutions and Tribal Colleges to provide science and engineering students internships, mentorships, scholarships and financial assistance. The program, referred to as the HBCU/MI program, was established in May 1998 and aims to involve the institutions in the Army's research programs.

AMC/RDECOM's display promotes the Historically Black Colleges and Universities/Minority Institutions and Tribal Colleges program at a recent career day event, which was held at Howard University in Washington, D.C. Nearly 200 students and faculty members attended the event and learned about the command's summer employment, grants, contracts and mentoring opportunities.

"This program provides significant exposure for the command and what it has to offer as a prospective employer," explained Jack Byers, HBCU/MI program manager. "It also attracts a wider and more diverse student population that might otherwise be unaware of the command."

Byers also explained that students might not consider AMC or RDECOM as career opportunities, as they often think that military jobs are only open to those in military service. "That's why I like to go out to events wearing a business suit so they know that opportunities aren't just for the green suits. Students are surprised to learn that nearly 95 percent of AMC's staff is civilian."

Richard Bailey, AMC's Office of Small and Disadvantaged Business Utilization, provides a Howard University student information on the command's scholarship and career opportunities.

Because AMC and RDECOM are large commands involved in diverse activities, the HBCU/MI program, in turn, is able to offer students a variety of meaningful opportunities. The intern program typically pairs a junior or senior student with one of RDECOM's research centers for a 10-week work project. The e-Mentoring program provides students the opportunity to correspond via e-mail with an AMC or RDECOM scientist or engineer to discuss a variety of research topics.

In addition, the Science and Technology Academic Recognition System program provides college seniors and graduate students financial support, summer employment and full-time employment upon receiving a master's degree. Another program component includes collaborative alliances among industry, a major university and a minority institution to develop telecommunication, interactive display and sensor technologies. The program also provides the colleges/institutions grant and contract opportunities in research and technology.

"I find that there are many 'hidden treasures' in federal programs. Our program is one of them," said Anthony Nguyen, HBCU/MI deputy program manager. "Many students don't even realize that opportunities abound everywhere in support of their education and career. The only secret is to know where to look."

In the future, the program plans to expand to more campuses, publish a success stories booklet and increase the number of command staff who serve as volunteers.

Tank-Automotive Center Partners with Industry to Improve Fuel Efficiency

By Peter G. DiSante and Jana Paschen

Warren, Mich.—The Tank-Automotive Research, Development and Engineering Center and several of its industry partners are researching ways to get more value for every gallon of fuel burned. One way is to allow the engine to run as close to its peak operating point as possible, while storing unused or previously "wasted" energy. This combination of engine power and energy storage is referred to as the hybrid concept.

The hybrid electric drive system is built on a stretch M113 light armored tracked vehicle and uses 40 commercial, spiral-wound, lead-acid sealed batteries for energy storage.

The research center is demonstrating the hybrid concept using two types of hybrid technologies: hybrid electric and hybrid hydraulic.

Under the hybrid electric concept, batteries store electric power generated by the engine during deceleration and idling. The stored power is then used to accelerate the vehicle until steady-state conditions are reached and the engine takes over. The research center's National Automotive Center Wheel and Track Systems team is currently involved in several hybrid electric programs.

One project, called the Advanced Hybrid Electric Drive 8x8 Demonstrator, is designed to meet the most severe military and commercial vehicle requirements in the 20-ton weight and power class. The demonstrator uses lithium-ion batteries for energy storage. TARDEC has teamed with General Dynamics Land Systems on this project.

Like the hybrid electric, the hybrid hydraulic technology stores otherwise wasted energy during vehicle operation. The energy storage device in this case is a hydraulic accumulator, which is pressurized with fluid while the vehicle is braking. The stored energy is then used to deliver additional torque to the drive shaft during periods of peak acceleration. The storing action has the added benefit of reducing the braking system's workload.

TARDEC teemed with Permo-Drive Technologies, Ltd. of Australia, the leading innovator of this technology, to verify the hybrid hydraulic concept. Working under a Cooperative Research and Development Agreement, the Army provided two of its family of medium tactical vehicles for the testing. Early independent testing shows a 37 percent reduction in fuel usage and a zero to 30 acceleration improvement from 14.5 seconds to 8.5 seconds. This technology also is ideally suited to commercial vehicles used for multiple stops and starts, such as delivery trucks, buses, refuse haulers, etc. In fact, the U.S. Postal Service has expressed a profound interest in the program.

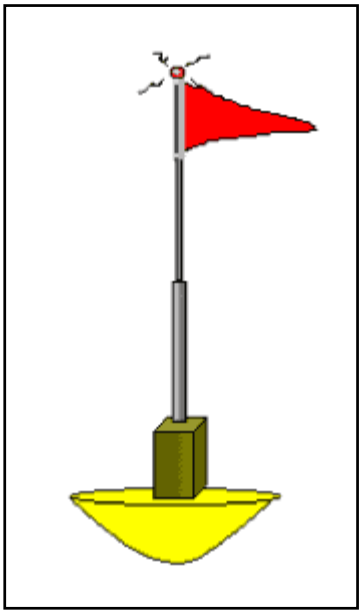
University of Missouri Students Develop Nuclear Chem Bio Marker

By Mike Cress

Fort Leonard Wood, Mo.—A team of student engineers from the University of Missouri has developed significant improvements to field markers that alert troops of the presence of nuclear, chemical and biological materials. Dubbed the “Smart Marker,” the student design features additional flags and a commercially available beacon, which together dramatically improve marker detection in areas of limited visibility.

The team leveraged available electronics technology, enabling detailed hazard information to be downloaded via radio frequency modem, or via infrared or hardwire communications ports. For example, using the radio frequency mode, detailed hazard data is visible from a truck 300 meters before the marker is physically encountered. This technology also could be useful for a number of different applications such as minefield, hazard and traffic control marking.

The students’ experiment involved a series of comparisons between current markers employed by the M93A1 Fox Reconnaissance Vehicle and several conceptual prototypes. Three student mechanical engineering teams developed prototypes, while a computer and electrical engineering team focused on the electronics module. The U.S. Training and Doctrine Command funded the concept evaluation program, and the University of Missouri provided matching funds.



The "Smart Marker," developed by University of Missouri engineering students, dramatically improves soldiers’ ability to detect field markers that alert them if nuclear, chemical or biological materials are present.

University of Missouri student engineers developed the prototype for “Smart Marker,” a field marker for nuclear, chemical and biological agents.

QuickSilver to Market Edgewood Center's Bio Sampling Kit

Edgewood Chemical Biological Center

Aberdeen Proving Ground, Md.—The Edgewood Chemical Biological Center recently announced a patent licensing agreement with QuickSilver Analytics, Inc., of Abingdon, Md., to produce its Biological Sampling Kit, or BiSKit, for commercial sale.

Under this agreement, QuickSilver will produce and market the center's invention. The BiSKit was developed in response to the increased need for biological sampling that arose after the October 2001 anthrax attacks. The BiSKit modernized the traditional methods of biological sampling, making it easier, safer and more reliable.

"This agreement is an excellent example of how ECBC transitions military technologies to the civilian sector," said Jim Zarzycki, ECBC technical director. "Technology transfer is an important component of our work at Edgewood."

QuickSilver Analytics, Inc., is a defense-related analytical laboratory with vast experience in chemical warfare and warfare-related chemicals. Quicksilver offers fully equipped, on- and off-site laboratories, sample analysis and project management services.

The BiSKit is a portable, disposable device that will permit inspectors and forensic evidence specialists to collect biological contaminants from surfaces. Testing has proven that it can effectively and safely collect bacteria, virus and toxin material for later analysis and archiving.

National Symposium Honors Outstanding Science Students

Army Research Laboratory

Adelphi, Md.—On a recent May evening, the Sheraton Colorado Springs Grand Ballroom was filled with excitement and anticipation as 48 high school students and some 300 of their peers, teachers and mentors waited to learn who was to receive high honors from the Army, Navy and Air Force-sponsored 41st National Junior Science and Humanities Symposium.

Present to bestow honors on the brightest of the bright were representatives of the program's three sponsors: Army Maj. Gen. John C. Doesburg, Air Force Maj. Gen. Paul Nielsen and Navy Vice Adm. Michael C. Colley. Of the 48 students who presented the results of their scientific research at this national program, eight students for each monetary category received scholarship amounts of $20,000, $10,000 and $6,000.

To qualify for the national competition, each of the 48 student presenters placed first in the research paper competition at their region’s symposium.

“Their accomplishment is no small success,” said Doris Cousens, director of the National Junior Science & Humanities Symposia. “More than 10,000 students in 48 regions competed for these top honors.” In addition to the 48 presenters of competing papers, another 48 presented non-competitive reports and 150 other highly placed regional delegates earned the opportunity to attend nationals.

“The program’s major goal is to encourage America's high school students to develop an interest in science, mathematics and engineering,” continued Cousens. “The program encourages independent research, and the students are exposed to military research and development projects that they might otherwise not learn about.”

For example, during the students’ four-day stay in Colorado Springs, they were guests of the U.S. Air Force Academy, where they were treated to research and development tours, a behind-the-scene tour of the Department of Energy's National Renewable Energy Laboratory and tours of such major attractions as Pikes Peak.

The Army, Navy and Air Force sponsor the annual Junior Science & Humanities Symposium, which reaches thousands of students every year. The program awards a total of $380,000 in tuition-based scholarships, but there is much more than money motivating these kids.

“They take their studies seriously and thrive on the challenge of seeking answers and solving problems,” said Cousens. “They're also active in their communities, involved in sports and have part-time jobs. They're all-around teenagers, and the military is proud to play a part in supporting them in their quest to be all that they can be.”

First place Junior Science & Humanities Symposium finalists and recipients of $20,000 undergraduate scholarships pose with program dignitaries. From left: Maj. Gen. Paul Nielsen, Air Force Research Lab, Wright Patterson Air Force Base, Ohio; Carolyn Tewksbury, Clinton Senior High, Clinton, N.Y.; Arun P. Thottumkara, Macomb High, Macomb, Ill.; James Zou, Upper Arlington High, Columbus, Ohio; Irene Sun, Ben Davis High, Indianapolis, Ind.; Navy Vice Adm. Michael C. Colley (Ret); Parmita Dalal, Shawnee Mission High, Lenexa, Kan.; Christina Dobson, Red Mountain High, Mesa, Ariz.; Brian Camley, Palmer High, Colorado Springs, Colo.; Ross Lang, Independence Homeschool, Yardley, Pa.; Doris Cousens, symposium director; Dr. Robert H. Rines, Academy of Applied Science president; and Army Maj. Gen. John C. Doesburg, commander, Research, Development and Engineering Command.

Army Research Lab School Programs Reach 100,000 Students

Army Research Laboratory

Adelphi, Md.—The Army Research Laboratory's school partnership and scholarship programs collectively reach more than 100,000 high school students throughout the United States, Puerto Rico and the Department of Defense Schools of Europe and the Pacific.

The following listing highlights the lab's school programs.

The Research and Engineering Apprenticeship Program offers historically under-represented high school students a chance to expand their background and understanding of scientific research by participating in a work/study atmosphere with a mentor in a laboratory setting during the summer months.

The Uninitiates' Introduction to Engineering Program assists under-represented students in preparing for entrance into engineering schools by providing the opportunity to participate in college-structured summer courses.

The International Science and Engineering Fair Program gives high school students a chance to present their projects, in competition with their peers, to Army judges who are special awards sponsors at these annual events. Each year, ROTC units, recruiting battalions, Army reservists and Army command/laboratory personnel serve as judges of student projects at more than 400 science fair competitions held throughout the United States, Puerto Rico and Guam.

In addition, the Department of Army provides the necessary funding for the travel of the team representing the United States at the International Mathematical Olympiad. Each year, thousands of high school students test their mathematical capabilities through progressive competition and six top-scoring students emerge to form the U.S. Olympiad team. The six-member team represents the United States in international competition with teams from more than 80 countries.

Grenade Production Problems Resolved

Armament Research, Development and Engineering Center

Picatinny Arsenal, N.J.—The Armament Research Development and Engineering Center partnered with the Project Manager for Combat Ammunition Systems and VSE Corporation to resolve historical problems with explosives and grenade production.

The PAX-2A explosive, developed at Picatinny in the late 1980s, is an explosive used in conventional munitions. However, several problems arose when the Army began full production of this explosive. When loaded into M77 grenades, the explosive material sticks to the grenade's explosive parts and heavy spillage occurs. In addition to creating a major safety concern, production costs were significantly escalated due to extensive cleaning and reduced production rates.

In determining the root causes of these problems, the team used a strategy called Six Sigma, which is a systematic, team-oriented six-step process used to solve technology challenges. Specifically, this process involves re-evaluating system requirements, brainstorming, taking a step-by-step look at the production process, analyzing system failures, conducting various experiments to test the production process and validating the results.

Using Six Sigma, the team was able to address the explosives loading problems by adding an acceptable flow agent to resolve the loading and smearing problem, determining the best particle size to minimize spillage and installing special equipment to prevent particle separation. As a result, M77 grenades can be successfully loaded with PAX-2A explosive at acceptable production rates. In addition, the team's efforts also improved the load rates for M80 grenades.

Robert Ho, insensitive munitions project officer; William V. Vogt, M915/XM916 project office; Donald A. Geiss, Jr., ARDEC mechanical engineer; and Keith E. Van Biert, ARDEC mechanical engineer contributed to this article.

Institute for Soldier Nanotechnologies Opens

Natick Soldier Center

Natick, Mass.—The Institute for Soldier Nanotechnologies, a joint research collaboration between the Army and Massachusetts Institute of Technology, formally opened during a recent ceremony in Cambridge, Mass.

Guests at the opening of the Institute of Soldier Nanotechnologies stop to view a demonstration on dynamic fluids during a guided tour of the laboratory.

Founded in March 2002 by a $50 million grant from the Army, the Institute's mission is to develop technologies for advancing soldier protection and survivability by combining basic and applied research in nanoscience and nanotechnology.

Scientists and engineers will be reaching for large results from the smallest of objects. Often at the level of manipulating individual atoms and molecules, nanotechnology involves the design and production of new materials or complex devices at the nanometer scale. A nanometer is about 50,000 times smaller than the diameter of a human hair.

The research may be obtuse, but the benefits are clear, said Charles Vest, president of MIT, during the ceremony. The vision is a 21st century lightweight bulletproof and waterproof battle uniform no thicker than ordinary spandex that monitors health, eases injuries, communicates automatically and potentially lends superhuman abilities.

"We already have the smartest soldiers. Now we're going to give them the smartest uniforms," said Claude Bolton, assistant secretary of the Army for acquisition, logistics and technology.

During his remarks, Maj. Gen. John Doesburg, commander, U.S. Army Research, Development and Engineering Command (Provisional), said the importance of the new institute "cannot be overstated."

(from left) Dan Harshman, equipment specialist at Operational Forces Interface Group; Claude Bolton, assistant secretary of the Army for acquisitions, logistics and technology; Spc. Jason Ashline, 10th Mountain Division; Charles Vest, MIT president; and Sgt. Raul Lopez, enlisted liaison with OFIG, participate in a ribbon-cutting for the new Institute for Soldier Nanotechnologies laboratory.

"When you look back to the Middle Ages and fast forward to today, we can't say we've come a long way," Doesburg said. "The technology that we saw today is revolutionary. What better place than this to do it."

"Nanotechnology once seemed far-fetched, but new equipment and tools can already create new materials, and in coming years we'll develop new machines for nanomaterials," said Vest. Bolton said it was only in the last 10 years that scientists were able to actually see atoms.

"You can't do better than at the atomic level," said Richard Smalley, a professor at Rice University, who further emphasized the thought expressed by previous speakers that the benefits of the Institute affect more than the military. "In all this nurturing, we may make the next new technology that leads all people to prosperity. This research will lead to other discoveries that will help the world."

Spc. Jason Ashline from the 10th Mountain Division (Light Infantry) at Fort Drum, N.Y., testified to the importance of the work to be done before cutting the ribbon to open the Institute. During a firefight in Afghanistan, the infantryman survived a hit to the chest from an AK-47 rifle round because of the protective body armor he was wearing.

Guests at the event were guided on tours of the Institute's 28,000 square feet of space on the fourth and fifth floors of 500 Technology Square on MIT's campus. The space consists of extensive, flexible laboratories; offices for students, visiting researchers and MIT faculty; and headquarters.

Research is currently under way in protection, performance improvement and injury intervention and cure. At three stations, demonstrators showed how fluids could be used to engineer a dynamic armor system that automatically changes from flexible to stiff when a ballistic threat is detected, how two separate nanoscale coatings for water resistance and microbe-killing can be combined and applied to textiles, and a method of creating artificial muscles that could provide extra strength for lifting or jumping, or serve as automatic tourniquets.

The facility contains state-of-the-art nano-fabrication and nano-characterization capabilities along with easy access to the rest of MIT's research infrastructure.

About 150 faculty, graduate students and post-doctoral research associates divided into seven research teams will apply their skills on nearly 50 research projects. Several visiting scientists from Army laboratories and participating industrial partners also will be part of the staff.

Army Research Laboratory in Adelphi, Md.; U.S. Army Natick Soldier Center and U.S. Army Research Institute of Environmental Medicine, both at the U.S. Army Soldier Systems Center in Natick, Mass.; and industry partners illustrated their roles in making an advanced uniform system with displays at a first floor exhibit.

Roaming about the displays were soldiers wearing the latest uniforms for Objective Force Warrior and Future Warrior. Both are product concepts that will incorporate nanotechnology.

MIT was chosen as the "best of the best" universities for the Institute while the industry partners will help to speed transition to the field, according to A. Michael Andrews, deputy assistant secretary for research and technology/chief scientist, Office of the Assistant Secretary of the Army.

people

RDECOM's talented scientists, researchers and engineers are among the top in their field. The "people" section includes news and feature articles about the command's diverse staff, including profiles, awards and other accomplishments.

Contents

Lab Employees Collect Books for Troops

By Tonya Johnson

Adelphi, Md.—James Kratzer never thought his idea of collecting books for soldiers would be such a tremendous success. Thanks to his efforts, 3,500 paperbacks were recently shipped to soldiers stationed overseas.

During a visit to Kuwait earlier this year, Krazter, a former Air Force major and now a contractor at the Army Research Laboratory in White Sands Missile Range, N.M., noticed that the troops did not have a lot to do during their down time.

"It became obvious they were bored at times," said Kratzer. "The soldiers spent most of their time cleaning their rifles or playing cards, but there was nothing for them to read. That planted a seed in my mind."

Once back in the United States, Krazter enlisted the help of some of his colleagues and started "Paperbacks for Troops." With help from the local Portales Friends of the Library, lab employees and contractors collected 3,500 paperbacks, mainly suspense and mysteries, in a month. The Las Cruces, N.M., chapter of the Red Cross shipped the books to soldiers overseas.

"It was important for us to do something for the soldiers," said Linda Duchow, co-chair of the fundraiser and a program analyst for the Computational and Information Science Directorate. "You feel kind of helpless, wishing you could do more. You realize they've got a job to do, and you want to find some way, any way, to support them."

Kratzer, who has worked at the lab for four years, visited Kuwait in late January for six weeks to train Air Force weather operators in using the Army's weather forecasting system.

"I wanted to do something for them to let them know I support them," Kratzer said. "They're heroes."

Natick's Clothing Designers Make Fashion Functional for Soldiers

Soldier Systems Center

Natick, Mass.—Although they're called clothing designers, the eight-member staff of Soldier Systems Center's Design and Prototype Facility mix science and fashion to create functional clothing items for warfighters. From helmet covers to socks, they design it all, yet their work is rarely about fashion and primarily a matter of function.

"What we do is more innovative engineering," said Heather Cumming-Rowell, senior clothing designer. "We often have to figure out how to work with experimental fabrics with the goal to provide improved protection, mobility, comfort and fit. We're looking to give warfighters the capability they need in the field."

The team's work space illustrates their diverse design projects, including the Air Warrior microclimate cooling garment, a protective body armor set that combat engineers use to clear mines, the Marine Corps utility uniform in the new camouflage pattern and a reversible Battle Dress Uniform constructed with desert camouflage on one side and woodland on the other.

The design process begins with a hand-drawn or computer-drawn sketch so the customer can visualize the final item. Upon approval, the design is entered into a Computer Aided Design system that enables electronic storage and modification of the pattern.

"There are times when you really need to decipher every design detail to visualize what the customer is actually looking for in a prototype," said Rachel Rizoli, a clothing designer. "Once the pattern is digitized, you never have to repeat the complete process. Say someone doesn't like the location of a button or the angle of a pocket, a designer can change this in the (computer) system."

Once patterns are entered electronically, a mechanical cutter precisely slices pieces of fabric for assembly or can cut out patterns for designers, customers and contractors. Ballistic materials are still cut by hand with a circular power knife.

The facility owns a collection of machines to help designers make rapid prototypes. Sewing machines complete various tasks, fusing machines create stiffness, an ultrasonic cutter slices fabric without fraying edges and pneumatic machines set plastic and metal snaps, grommets and eyelets. Seam-sealing machines and heavy-duty presses are also available.

The facility typically constructs 10 to18 prototype copies for initial fit and wear tests, according to Cumming-Rowell.

Edgewood Center Chief Scientist Publishes 14th Book

Edgewood Chemical Biological Center

Aberdeen Proving Ground, Md.—Dr. Harry Salem, the Edgewood Chemical Biological Center's chief scientist, is no stranger to the publishing industry. A previous Society of Toxicology fellow with a flair for writing, he recently published his 14th book, entitled "Alternative Toxicological Methods for the New Millennium."

Edited by Salem and Sidney Katz of Rutgers State University, and including contributions from more than 125 international scientists in government, industry and academia, the book explores the development and validation of replacement, reduction and refinement alternatives of traditional animal testing.

"I'm really pleased with the publication and the contributions received from colleges around the world," said Salem. "It was a scholarly and rewarding partnership with my co-editor Sidney Katz."

"Alternative Toxicological Methods for the New Millennium" presents state-of-the-art validation and regulatory acceptance of alternative testing methods and includes updates from both the Interagency Coordinating Committee for the Validation of Alternative Methods and the European Center for the Validation of Alternative Methods. It also discusses the latest developments in toxicological science, details cutting edge research on artificial materials for evaluating ocular, or eye, injury and explores the utility of genetic techniques for observing skin reactions.

Four of Salem's previous books, focusing on alternative toxicological methods, resulted from the National Defense Authorization Act directing the Department of Defense to establish aggressive and targeted programs to replace, reduce and refine current use of animals (H. Report 10 2-527; 102D Congress 2nd Session). For his efforts, Salem received the Group Recognition Award from the Food and Drug Administration for his outstanding contribution in advancing the development of non-whole animal alternative methods.

With his eye on the horizon, Salem expects to produce his next book on inhalation toxicology in early 2004.

Chemist Moonlights as Rodeo Cowboy

By Tonya Johnson

Adelphi, Md.—There's a cowboy in town, and his name is Dr. Troy Alexander. His day job is a research chemist at the Army Research Laboratory's Sensors and Electron Devices Directorate, but Alexander is a rodeo bull rider in his spare time.

Dr. Troy Alexander, a research chemist at Army Research Lab, has won more than 100 rodeo competitions during his 14-year rodeo career.

"Bull riding isn't for everyone," he said. "It's not like golf or tennis. As a cowboy, you are right where man meets nature."

Alexander, 32, grew up in Port Hudson, La., and has a bachelor's in chemistry from Louisiana State University and a doctorate in analytical chemistry from Marquette University. While growing up in Louisiana, Alexander watched his father and uncle ride in rodeos.

"This is my calling," said Alexander. "Cowboys are born not made."

"When I first met him, I didn't realize he was a cowboy," said Dr. James Gillespie, a physicist and Alexander's team leader. "Once you get to know Troy, you realize he's a no nonsense person who doesn't take any bull from anyone. It's fun going to the rodeo to watch him ride because he looks so small on top of a 2,000-pound bull."

Alexander is a member of the Professional Rodeo and Cowboy Association, which is the largest sanctioning cowboy association in the world. He is currently ranked fourth in his region and participates in 35 to 50 rodeos a year. During his 14-year rodeo career, Alexander has won more than 100 rodeos.

Alexander said his cowboy experience has made him a better scientist for the Army. At the lab, Alexander works on the development of techniques to detect biological weapons.

"The most distinguishing thing about cowboys is that we're independent, and we're willing to try anything even when the odds are against us. That's the same spirit scientists need," said Alexander.

Edgewood Center Receives Homeland Defense Award

Edgewood Chemical Biological Center

Aberdeen Proving Ground, Md.—The Edgewood Chemical Biological Center's Homeland Defense Business Unit recently received the Lockheed Martin Homeland Security Center Award for its Biological Aerosol Warning System, which is used to detect biological agents.

ECBC received the award for demonstrating homeland security applications that can be integrated with various technologies into a single unit. The aerosol warning system was combined with chemical and radiological sensors to form a single device called the Chemical, Biological, Radiological Early Warning System.

"This is a prime example of dual-use," said Jim Zarzycki, ECBC technical director. "The technology we're developing is helping the country both abroad and at home."

The award was presented at the Federal Office Systems Exposition 2003 conference, the largest government-focused information technology exposition. This year's conference featured homeland security technologies, and the warning system was a featured technology demonstration.

Helicopter Society Honors Army Researchers

Army Research Laboratory

NASA Langley Research Center, Va.—Three researchers from the Army Research Laboratory are part of a team that recently received the American Helicopter Society's 2003 Harry T. Jensen Award.

Dr. Karen Jackson, Dr. Ed Fasanella and Dr. Richard Boitnott, all members of the lab's Vehicle Technology Directorate, will share in the award with researchers from the Rotorcraft Industry Technology Association and the NASA Langley Research Center. The award is given in recognition of outstanding contributions to the improvement of helicopter reliability, maintainability or safety through improved design.

The team was honored for their work in multi-terrain impact safety. During the past year, the team investigated the effect of impact surface (rigid, soft soil and water) on the crashworthy response of composite airframe structures. This successful project improved rotorcraft safety, and the knowledge will be used to assess and improve the crashworthy performance of existing and future rotorcraft.

(from left) Dr. Richard Boitnott, Dr. Karen Lyle, Dr. Karen Jackson and Dr. Edwin Fasanella are members of a research team that received the American Helicopter Society's 2003 Harry T. Jensen Award. Boitnott, Jackson and Fasanella work for the Army Research Laboratory's Vehicle Technology Directorate. Lyle works for the NASA Langley Research Center in Virginia, where the Vehicle Technology Directorate is co-located.

Research Lab Names NCO of the Year

By Tonya Johnson

Adelphi, Md.—Staff Sgt. Richard Kinsman is still in shock. A nine-year Army veteran, Kinsman was selected as this year's Army Research Laboratory Non-Commissioned Officer of the Year.

"I'm surprised, but I'm proud of myself because I didn't think I would win," he said. "I've learned that if I want to succeed, I've got to step up to the next level and take on more challenges and more responsibilities."

Kinsman received numerous awards and prizes for winning, including the Army Commendation Medal, a Memorandum of Commendation, a director's coin, a coin from ARL Sgt. Maj. Enoch Godbolt, a trophy, a $500 savings bond, and an ARL baseball cap.

Col. Anthony Love (at left), military deputy for ARL's Computational and Information Science Directorate, presents the Army Commendation Medal to ARL's Non-Commissioned Officer of the Year, Staff Sgt. Richard Kinsman.

The competition involves senior non-commissioned officers quizzing soldiers competing for the title. To prepare for the competition, Kinsman read field manuals and Army regulations on subjects including military justice, flags, drill and ceremony, and code of conduct. His wife, Rowena, also quizzed him.

"She's been supportive the whole time, and I couldn't have done this without her," he said.

The Tampa, Fla., native is a research and development technology engineering technician in the Survivability and Lethality Analysis Directorate at White Sands Missile Range in White Sands, N.M. He has been with ARL for two years, and said he has learned a lot from his co-workers.

"A lot of them have opened up and shared with me what they do," he said. "It's interesting to see how technology is created. Soldiers may see a product, but not know what is involved in creating it. It takes civilians and soldiers to accomplish the mission."

Kinsman, 27, currently is studying for the Army Materiel Command's Non-Commissioned Officer of the Year competition, which is in June.

"There's no doubt in my mind that he'll do well at the AMC and Department of the Army levels because he's shown at this competition that he'll make a great leader," said Col. Anthony Love, military deputy for the Computational and Information Sciences Directorate.

In the future, Kinsman plans to finish his associate degree in computer technology at New Mexico State University and make a career in the military.

"The Army is a good organization," Kinsman said. "You can make a difference whatever rank you are."

Armament Center Receives Army 'Oscar' for Installation Excellence

By Myra Hess

Picatinny Arsenal, N.J.—The Armament Research Development and Engineering Center was recently recognized at a Pentagon ceremony for being named one of the Army's top 10 installations. This marks the third time the research center has received the prestigious Army Communities of Excellence Award for installation management excellence, having received first-place ranking in previous years.

Army Vice Chief of Staff Gen. John M. Keane and Principal Deputy Assistant Secretary of the Army for Installations and Environment Geoffrey G. Prosch presented the award to ARDEC Commander Brig. Gen. Larry C. Newman and ARDEC Technical Director Michael Devine.

Keane said that the awards recognize the outstanding and innovative efforts of the people who operate and maintain U.S. Army installations. It is the Army's "Oscar" for installation management excellence. The winning installations succeeded in improving working environments, housing and recreational opportunities.

"When soldiers return home from a deployment, the flags fly and the bands play in tribute to their sacrifice and service. Those of us in uniform know, however, that we could never accomplish all that our nation asks of us without the tremendous support of those who run our installations," he said.

Col. Anthony Love (at left), military deputy for ARL's Computational and Information Science Directorate, presents the Army Commendation Medal to ARL's Non-Commissioned Officer of the Year, Staff Sgt. Richard Kinsman.

The center was ranked number one in 1996 and again in 2000. Taking first place this year was the 10th Area Support Group in Torii Station, Okinawa, Japan.

"ARDEC is widely known within (the Department of Army and Department of Defense) for its innovation and continuous improvement…ARDEC has made great strides in its quality journey," said Don Denery, ARDEC customer advocate/Total Quality Management officer.

The 2003 finalists received a silver trophy, an Army Communities of Excellence flag and $500,000.

Tank-Automotive Receives Environmental Safety Certification

By Monica Kapso

Warren, Mich.—The Tank-Automotive Research, Development and Engineering Center recently celebrated the certification of its Environmental Management System, making it the first Army research center to receive the certification.

Three years in the making, the center achieved its goal to become third party certified by passing a formal certification audit. Audit findings, performed by CRS Registrars Inc. of Maumee, Ohio, indicated outstanding conformance. Auditors also evaluated the center's strict, self-imposed environmental policy that ensures compliance with all local, state and federal environmental regulations. The policy takes extra steps to further minimize pollution, educate employees about the Environmental Management System and reinforce commitment to a proactive environmental policy.

Noting the center's proactive environmental stance, CRS President Bill Niedzwiecki said, "(The center) took their environmental policy to the next level by taking the initiative and adding accountability by seeking third party certification." The certification, officially called the International Organization for Standardization 14001, is applicable to the center's research, development and engineering of military ground vehicle systems and associated weapon systems.

The center is now starting down the challenging road of maintaining the Environmental Management System.

According to center Director Dr. Richard McClelland, "Our mission is to be proactive and to avoid non-conformances at all costs. We must continue the task of further developing the culture of our workforce to sustain this program. (Certification) will continue to be an integral part of our daily work environment."

news briefs

The "news briefs" section provides quick summaries of various news and events from throughout RDECOM.

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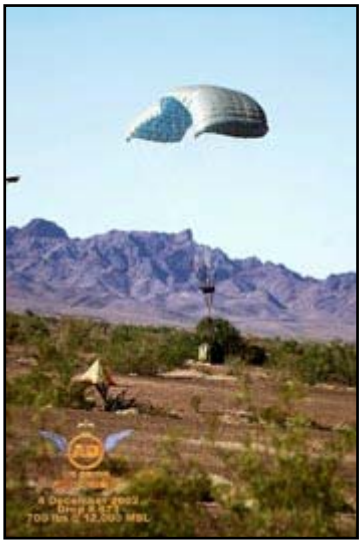
Airdrop System Makes Equipment Drop Offs More Precise

Natick Soldier Center is partnering with the Air Force to develop high altitude, precision airdrop technology that can rapidly deploy and re-supply locations around the world.

The Precision and Extended Glide Airdrop System will allow conventional military aircraft to accurately drop sensors, munitions and supplies onto the battlefield while minimizing risk to aircraft and enemy detection of drop zones. The system will use Global Positioning System guidance and gliding parachute technologies to deliver cargoes with near pinpoint accuracy.

The 10,000-pound system is a joint Army and Air Force proposed fiscal year 2004 technology demonstration to provide worldwide equipment re-supply within 24 hours from the request. It will meet joint requirements; enable global direct anytime/anywhere supply delivery; increase personnel, equipment and cargo survivability; reduce ground and air battle space detection; allow en-route mission/destination changes; and permit multi-load/multi-drop zone locations.



Natick's precision air drop system, a joint Army and Air Force proposed fiscal year 2004 technology demonstration, can handle up to 10,000 pounds and enable worldwide, anytime/anywhere equipment delivery.

2003 SMART Conference Set for September

Tank-Automotive Research, Development and Engineering Center and the Army Model and Simulation Office will co-sponsor the 2003 Simulation and Modeling for Acquisition, Requirements and Training Conference, the Army's premier modeling and simulation forum, which will be held at the Hyatt Regency in Dearborn, Mich., on Sept. 8-11, 2003.

The conference theme will be "Learning from our Future Combat Systems Experiences: Synthesizing a Cross-Domain SMART Approach to the Objective Force." Conference highlights will include tours of local modeling and simulation facilities and a reception at the world-renowned Henry Ford Museum. W.H. "Dell" Lunceford, AMSO director, and TARDEC Executive Director for Research Dr. Grace Bochenek will serve as conference chairs.

"The 2003 SMART conference will allow the Army to connect with (modeling and simulation) professionals in the commercial world—that's part of the reason why we wanted to have this conference in the heart of the U.S. automotive industry," said Bochenek.

Techtrends Symposium Features Armament Center

Representatives from the Armament Research, Development and Engineering Center successfully participated in the TechTrends 2003 Symposium, which was recently held in Wilmington, Del.

Co-hosted by the Strengthening the Mid-Atlantic Region for Tomorrow Congressional Caucus, TechTrends 2003 provided a collaborative forum for attendees to learn where key federal agencies will be directing their technology research and development funding.

Through the briefings, attendees gained insight into future technology directions, along with an in-depth understanding of the latest research and development initiatives. The plenary session included keynote addresses by Delaware Rep. Michael Castle, Pennsylvania Rep. Kurt Weldon, former Delaware Gov. Pierre "Pete" Dupont, Delaware Gov. Ruth Ann Minter and Dupont Chairman and CEO Chad Holliday.

The center's 30-foot display featured storyboards and models that highlighted partnering, homeland defense and support to Operation Iraqi Freedom.

Tim Ryan, chief of ARDEC's Technology Integration Division, introduces the homeland security panel members at the recent TechTrends 2003 Symposium. Photo by Elaine Serao

monthly features

Each month, RDECOM Magazine features articles on specific aspects of the command's mission. The "monthly features" section enables readers to learn more about the command's diverse mission and activities.

The June 2003 edition of RDECOM Magazine features the command's partnerships with academia and industry. These partnerships are shaping young scientists and engineers, and supporting development of critical technologies for the warfighter. The articles listed along the right column of this page are this edition's monthly features, or take this link directly to the partnership news department.

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